IN THE CLAIMS

1. (Currently Amended) An apparatus for generating and retrieving information based on standardized formats of sentence structure and semantic structure, the apparatus comprising~~:~~:

a data storing means for storing language knowledge data used to analyze a sentence for information supply and a query for information request from a user, semantic representation data for representing sense of sentence as a conceptual graph, and Web documents;

an input means for receiving a natural language query sentence for generation of a natural language sentence for information supply and specification of information request from the user;

an input sentence analyzing means for analyzing sentence structure of the natural language sentence or the natural language query sentence inputted from the user with reference to data stored at the data storing means to generate semantic ~~structure~~relation;

semantic structure processing means for partitioning the semantic structure analyzed by the input sentence analyzing means to index and store or for computing semantic relevance to search supply information and document most semantically relevant to the requested information specification;

an interactive processing means for outputting sentence format rule for which failure data from the input sentence analyzing means is corrected depending on the standardized formats of sentence structure and semantic structure, and indexing and searching result; and

an information transferring means for transferring the data from the interactive processing means to the user~~.~~

wherein the semantic relevance (S(x,y)) is a distance from a node x to another node y in the thesaurus system and can be express as:

$$S(x,y) = \frac{1}{1+d(x,y)}$$

where d(x,y) is a distance between the nodes x and y in the thesaurus system, and

d(x,y), i.e., the distance from the node x to the node y in the thesaurus system, is 0 if the node y is one of lower nodes and is computed as the number of edges between the nodes if otherwise.

2. (Previously Presented) The apparatus as recited in claim 1, wherein the input sentence analyzing means receives the sentence inputted from the user, sequentially analyzing it by

comparing it with data of lexicon storing means, predicate case frame storing means and noun thesaurus storing means included in the data storing means, morphologically analyzes at a morphological analyzer, parses at a parser to generate a sentence structure tree, and performs semantic analysis at a semantic structure generator to generate the semantic relation.

3. (Currently Amended) The apparatus as recited in claim 1, wherein the semantic structure processing means includes:

a conceptual graph transformer for transforming a conceptual graph outputted from the semantic structure generator depending on semantic relation;

a conceptual graph indexer for indexing the Web documents including the supply information of the user by using a record of a conceptual pair related with ~~each~~ the semantic relation transformed by the conceptual graph transformer; and

a conceptual graph searcher for searching the supply information having highest semantic relevance between the semantic relation of the user's query and the stored semantic relation.

4. (Previously Presented) The apparatus as recited in claim 1, wherein the interactive processing means solves analysis failure of spelling or spacing error, non-sentence disobeying the standardized formats of sentence structure and semantic structure, and ambiguities of the sentence structure and the semantic structure.

5. (Currently Amended) A method for generating and retrieving information for use in an apparatus for generating and retrieving information based on standardized formats of sentence structure and semantic structure, the method comprising the steps of:

(a) transforming a natural language sentence (information and knowledge) described by an information provider to a conceptual graph depending on standardized formats of sentence structure and semantic structure and indexing the conceptual graph; and

(b) transforming a natural language query sentence inputted from a user to a conceptual graph depending on the standardized formats of sentence structure and semantic structure and searching information relevant to the ~~requirement of~~ natural language query sentence inputted from the user among the indexed information~~.~~,

wherein the natural language sentence (information and knowledge) described by the information provider and the natural language query sentence inputted from the user to the conceptual graph depending on the standardized formats of sentence structure and semantic structure includes the steps of:

(f) morphologically analyzing the natural language sentence by a morphological analyzer when the natural language sentence for information to be provided by the information provider or to be supplied to the information provider and checking whether morphological analysis is performed successfully;

(g) if morphological analysis fails, generating failure type data depending failure type, and, if morphological analysis is performed successfully, analyzing the sentence structure by using the morphological analysis result;

(h) transforming the sentence analysis tree to the semantic relation depending on the generation of the analyzed sentence structure; and

(i) inputting the semantic relation to a conceptual graph transformer depending on appropriateness of the semantic relation for the standardized format and partitioning the conceptual graph,

wherein the step (f) includes the steps of:

(f1) initializing a highest node level (d) and depth (N) of the partitioned graph in order to retrieve request information and document of the information provider;

(f2) after the initializing step, searching a relation node (n) that belongs to the level (d) of the conceptual graph depending on comparison result for the highest node level (d) and depth (N) of the partitioned graph;

(f3) determining language characteristic search priority nodes (c1, c2) and computing semantic relevance (S(x,y)) of each record searched from a table related to the relation node (n) and depending on the priority rule of the language (L1-Ln) for the determined priority nodes (c1, c2); and

(f4) depending on computation of the semantic relevance (S(x,y)), increasing the level (d) of the highest node and repeating the step (j),

wherein the semantic relevance (S(x,y)) is a distance from a node x to another node y in the thesaurus system and can be express as:

$$S(x,y) = \frac{1}{1+d(x,y)}$$

where d(x,y) is a distance between the nodes x and y in the thesaurus system, and d(x,y), i.e., the distance from the node x to the node y in the thesaurus system, is 0 if the node y is one of lower nodes and is computed as the number of edges between the nodes if otherwise.

6. (Currently Amended) The method as recited in claim 5, wherein the step (a) includes the steps of:

(c) generating a sentence in which ambiguities of the sentence structure and the semantic structure of the sentence inputted by the information provider depending on the standardized formats of sentence structure and semantic structure;

(d) transforming the generated sentence to the conceptual graph by sentence analysis and semantic analysis depending on the standardized formats of sentence structure and semantic structure; and

(e) transforming the ~~transformed~~ conceptual graph to a record of a table by relation node and indexing the record depending on the standardized formats of sentence structure and semantic structure.

7. (Currently Amended) The method as recited in claim 5, wherein, at the step (a), a sentence relevant to the standardized formats of sentence structure and semantic structure is generated by generating information for information transaction to guide the user to make the sentence from the user have the standardized format.

8. (Currently Amended) The method as recited in claim 7, wherein, at the step (a), if ~~the sentence structure analysis and~~ the generation of the semantic structure fail, a number of analysis results is presented to the user in orders of analysis to help the user to select a correct sentence or sense.

9. (Original) The method as recited in claim 5, wherein the step (b) includes the steps of:

(c) analyzing the sentence structure and the semantic structure of the natural language query sentence received from the user and transforming the sentence to a conceptual graph;

(d) computing the semantic relevance by searching the semantically nearest conceptual graph at a database to the conceptual graph of the query; and

(e) extracting information indexed by the searched conceptual graph to provide to the user.

10. (Cancelled)

11. (Currently Amended) The method as recited in claim ~~10~~5, wherein the semantic structure generating step includes the steps of:

(j) receiving from a semantic structure generator a sentence tree (T) in which ambiguities of the sentence structure is solved and transforming the sentence tree (T) to pre-stage conceptual graph (P-CG) depending on a tree transformation rule;

(k) searching information to be processed as a referent from the P-CG by using a numeral and definitive processing rule to define as the referent and processing the conceptual node by setting a proper noun and the tense as type information of the concept by using a thesaurus system, in order to transform the transformed P-CG to a conceptual graph in which the semantic ambiguities are solved; and

(l) after the concept node processing, generating a conceptual graph of a final semantic structure by determining relation between concept nodes by the thesaurus system and frame information.

12. (Cancelled)

13. (Cancelled)

14. (Previously Presented) The method as recited in claim 5, wherein, during the step (b), information stored and retrieved with respect to semantic relation by partitioning the semantic relation graph and information and document nearest to the request information specification of

the user is retrieved by using the semantic relevance between concepts by a noun thesaurus system.

15-19 (Cancelled)

20. (Currently Amended) A computer readable medium for recording a program for implementing, at an information generating and retrieving apparatus based on standardized formats of sentence structure and semantic structure having a processor, the functions of:

(a) transforming a natural language sentence (information and knowledge) described by a information provider to a conceptual graph depending on standardized formats of sentence structure and semantic structure and indexing the conceptual graph; and

(b) transforming a natural language query sentence inputted from a user to a conceptual graph depending on the standardized formats of sentence structure and semantic structure and searching information relevant to the requirement of the user among the indexed information~~.~~,

wherein the natural language sentence (information and knowledge) described by the information provider and the natural language query sentence inputted from the user to the conceptual graph depending on the standardized formats of sentence structure and semantic structure includes the steps of:

(f) morphologically analyzing the natural language sentence by a morphological analyzer when the natural language sentence for information to be provided by the information provider or to be supplied to the information provider and checking whether morphological analysis is performed successfully;

(g) if morphological analysis fails, generating failure type data depending failure type, and, if morphological analysis is performed successfully, analyzing the sentence structure by using the morphological analysis result;

(h) transforming the sentence analysis tree to the semantic relation depending on the generation of the analyzed sentence structure; and

(i) inputting the semantic relation to a conceptual graph transformer depending on appropriateness of the semantic relation for the standardized format and partitioning the conceptual graph,

wherein the step (f) includes the steps of:

(f1) initializing a highest node level (d) and depth (N) of the partitioned graph in order to retrieve request information and document of the information provider;

(f2) after the initializing step, searching a relation node (n) that belongs to the level (d) of the conceptual graph depending on comparison result for the highest node level (d) and depth (N) of the partitioned graph;

(f3) determining language characteristic search priority nodes (c1, c2) and computing semantic relevance (S(x,y)) of each record searched from a table related to the relation node (n) and depending on the priority rule of the language (L1-Ln) for the determined priority nodes (c1, c2); and

(f4) depending on computation of the semantic relevance (S(x,y)), increasing the level (d) of the highest node and repeating the step (j),

wherein the semantic relevance (S(x,y)) is a distance from a node x to another node y in the thesaurus system and can be express as:

$$S(x,y) = \frac{1}{1+d(x,y)}$$

where d(x,y) is a distance between the nodes x and y in the thesaurus system, and d(x,y), i.e., the distance from the node x to the node y in the thesaurus system, is 0 if the node y is one of lower nodes and is computed as the number of edges between the nodes if otherwise.

21. (Cancelled)

22. (Cancelled)